

Claims

1. Voltage booster device (3) such as to selectively assume an active status and a stand-by status, said device comprising:

5 - a first terminal (15) such as to assume a respective electric potential and associated to a first capacitor (16),

10 - a second terminal (10) associated to a second capacitor (11) and selectively connectable to the first terminal (15),

characterised in that it also comprises circuital means for discharging (100) the first capacitor reducing in module the electric potential of the first terminal (15), the circuital means being 15 activated to function when said device is in the stand-by status and the second terminal (10) is disconnected from said first terminal (15).

2. The device (3) according to claim 1, wherein said circuital means (100) make it possible to discharge 20 the first capacitor (16) in order to avoid perturbations of said second terminal (10) due to interactions between the first and second capacitor that can occur when the first and second terminals are connected.

25 3. The device (3) according to claim 1, wherein said circuital means (100) comprise a discharge device

(106) connectable to said first terminal (15) and such as to cause a discharge current ( $I_{disch}$ ) of the first capacitor (16) when the said electric potential is higher in module than a preset value, the discharge device (106) being enableable/disableable to/from function by means of a first command signal (PMPDISCH).

4. The device (3) according to claim 3, wherein said circuital means (100) also comprise detection means (104,105) such as to generate the first command signal (PMPDISCH) of the discharge device (106) starting from a first voltage (V-DIV) correlated to the electrical potential of the first terminal (15).

5. The device (3) according to claim 4, wherein said means of detection (104,105) comprise a voltage comparator (105) for comparing the first voltage (V-DIV) with a reference voltage (VREF), said voltage comparator supplying in output the first command signal (PMPDISCH).

6. The device (3) according to claim 4, wherein said discharge device (106) includes a MOSFET (108) having a control terminal connected to said detection means for receiving the first command signal (PMDISCH).

7. The device (3) according to claim 5, wherein the detection means (104,105) comprise a voltage divider (104) connected to said first terminal (15) and such as to provide said first voltage to the voltage comparator

(105) .

8. The device (3) according to claim 1, comprising a booster stage (12) connected to said first terminal in order to supply the electric potential 5 greater in module than a supply voltage of the device (3) .

9. The device (3) according to claim 8, also comprising a voltage regulator stage (17) that can be connected to the booster stage (12) in the active status 10 in order to receive said electric potential and to supply an operative voltage on the second terminal (10) .

10. The device (3) according to claim 1, also comprising a voltage booster stage (5) in order to raise in voltage the second terminal (10) when the device is 15 in the stand-by status and the first and second terminal are disconnected.

11. The device (3) according to the claim 10, wherein the voltage boost stage (5) also makes it possible to raise in voltage the first terminal (15) 20 connected to the second terminal (10) when, in the stand-by status, the said circuital means for discharging (100) are deactivated.

12. The device (3) according to claim 1 provided with at least one input for receiving a second command 25 signal (SB) such as to take the device into the stand-by

status or into the active status.

13. The device (3) according to claim 12, wherein  
the circuital means (100) comprise commutation means  
(101, 102) destined to electrically connect/disconnect  
5 the first terminal (15) to/from the second terminal  
(10), said means of commutation being commanded by at  
least one piloting signal of commutation (PMPCONHV\_N,  
REGCONHV\_N).

14. The device (3) according to claim 13, wherein  
10 said circuital means (100) also comprise at least one  
circuit (109;110) for the generation of said at least  
one piloting signal of commutation (PMPCONHV\_N,  
REGCONHV\_N) starting from said second command signal  
(SB) and from a signal (LOWPMP) representative of the  
15 reduction of said electric potential following discharge  
of the first capacitor (16).

15. The device according to claim 9, also  
comprising additional voltage booster means (112; 113)  
of said first terminal (15) when said device is taken  
20 into the active status after a period in the stand-by  
status and for a preset interval of time, said  
additional means supplying to the first terminal (15)  
electric charge in order to compensate an initial  
absorption of current from said first capacitor (16)  
25 that occurs on entry into the active status.

16. The device according to claim 15, wherein said additional means (112;113) are such to supply electric charge in order to support at least one static supply current of said regulator stage (17).

5 17. The device according to claim 15, wherein said additional means (112;113) are such to supply at least one transient current in order to compensate a transient current absorption by a charge that can be connected to said second terminal (10) of the voltage regulator (17).

10 18 The device according to claim 15, wherein said additional means comprise an additional charge pump booster (112) of the rapid activation type.

19 The device according to claim 15, wherein said additional means (113) comprise a first piloting element  
15 (B1) connected to at least a first compensation capacitor (CB-dc) connected to the first terminal (15), said first capacitor being piloted by said first piloting element (B1) in order to supply electric charge starting from which is obtainable said at least one static current.

20. The device according to the claim 19, also comprising a second compensation capacitor (CB-WL1) associated to said first compensation capacitor (CB-dc) that can be piloted by said first piloting element (B1)  
25 in order to supply electric charge from which said

transitory current is obtainable.

21. The device according to claim 20, wherein said additional means (113) include at least one second piloting element (B2, Bn) connected to at least one 5 second compensation capacitor in such a way as to supply electric charge in order to support a further transient current and compensate an absorption of current by part of a further charge that can be connected to said second terminal (10).

10 22. Non-volatile memory system comprising:

- a matrix of memory cells organised in rows and columns,

- a voltage booster device (3) for boosting in module a supply voltage and supplying an operative 15 voltage to said memory matrix,

characterised in that said voltage booster device is realized according to at least one of the previous claims.